1.	Title of the course	Structural Stability and Design
2.	Course number	CE508L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CE5115/3
6.	To be offered by	Department of Civil and Environmental Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** 1. To introduce the fundamental concepts of structural stability in investigating the buckling behaviour of columns, beams, rigid frames and thin plates 2. To demonstrate the development of codal provisions for the stability design of steel structural elements from theoretical principles.	
10.	**Course Content:** Stability of Compression member- Concept of elastic stability, classical theory and 4th order D.E, Small and large deformation behavior,IS: 800 column design curves, Effect of shear deformation in column, energy and Numerical methods. Buckling of columns with thin walled open sections - St.Venant's and Vlasov's torsion, Torsional Buckling and flexural torsional buckling. Stability of Beams- Elastic lateral buckling and IS: 800 beam design. Stability of rigid frames-Introduction to beam-columns, Assessment of critical load by neutral equilibrium and slope deflection equations, Matrix method of stability analysis. Buckling of Thin plates-D.E of plate buckling,critical buckling load of plates with different boundary conditions.	
11.	**Textbook(s):** 1. Chajes A, Principles of elastic stability, Prentice Hall, NJ, 1974. 2. Chen W F, and Lui E M, Structural stability-Theory and Implementation, Elsevier, New York, 1987.	
12.	**Reference(s):** 1. Iyengar N G R, *Structural stability of columns and plates*, Affiliated East-West Press, New Delhi (1986). 2. McGuire W, Gallagher R H, and Zieman R D, *Matrix structural analysis*, John Wiley, NY (2000). 3. Timoshenko, S.P., and Gere, J.M., Theory of elastic stability, McGraw Hill, London, 1963	